DOCUMENT RESUME

ED 142 285 PS 009 384

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TITLE Stability and Change in Family Status, Situational, and Process Variables and Their Relationship to Children's Cognitive Performance.
SPONS AGENCY Office of Child Development (DHEW), Washington, D.C.
PUB DATE Mar 77
GRANT OCD-H-8256
NOTE 35p.; Expanded version of paper presented at the Biennial Meeting of the Society for Research in Child Development (New Orleans, Louisiana, March 17-20, 1977); For detailed procedures and findings of this project, see ED 138 339

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Academic Achievement; Cognitive Development; *Elementary Education; Elementary School Students; *Family Environment; Intervention; *Longitudinal Studies; *Low Income; Mothers; Racial Differences; Research Methodology; Rural Environment; Sex Differences; *Sociocultural Patterns; Urban Environment

ABSTRACT

This study investigated the interrelationships among status, situational and process variables describing the child's home environment and the relationship of these variables to the child's concurrent cognitive-perceptual performance. Parent interview and child test data collected for 1212 predominantly low-income urban and rural study children (8 1/2 to 9 years of age) were examined. Analyses of the data focused on performance in basic school skills of reading and math, although less school-related problem-solving ability was examined, too. For the 863 families who also had been interviewed six years earlier, the ensuing longitudinal data enabled assessment of the stability of sociocultural determinants and the extent of impact of early home influences on later school success. Also indicated were developmental trends and interrelationships that become increasingly apparent with measurement in subsequent years. The extent to which findings differed according to geographical region and the child's sex, race, and enrollment in Head Start or other preschool programs is described and implications of the findings for social/educational intervention are discussed. (Author/MS)

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ED142285

Stability and Change in Family Status, Situational, and Process Variables and Their Relationship to Children's Cognitive Performance [1,2]

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PS 009384

[1] This is an expanded version of the paper presented at the biennial meeting of the Society for Research in Child Development in New Orleans, March 1977. Detailed procedures and findings are described in Project Report 75-28 authored by Shipman, V., McKee, D., and Bridgeman, B.

[2] The research described in this paper was supported by Office of Child Development, Department of Health, Education, and Welfare Grant H-8256.

Introduction

In a continuing programmatic effort to understand the child's development in interaction with his or her environment, the families of 1212 predominantly low-income urban and rural nine-year-old children were interviewed at home. Particular attention was paid to assessing the relationship of status and situational characteristics to attitudinal and behavioral indicators of family processes. For the 863 families who also were interviewed six years earlier, the data provided an index of the stability and change in mean levels and patterns of relationship among those status, situational, and process characteristics assessed at both time periods. The relationship of family variables to the child's academic achievement (Cooperative Primary Math and Reading Tests) and less school-related problem-solving ability (Raven's Coloured Progressive Matrices Test) also was examined, with information provided both on concurrent relationships and on the extent to which early measures of the child's home environment were predictive of the child's later cognitive-perceptual performance. For the latter, part correlations also were obtained to investigate (a) the extent to which these measures contributed to predictions beyond that provided by the variance they shared in common with the child's preacademic skills (Preschool Inventory performance at age four) and (b) the extent to which change on these family variables accounted for the child's performance at age nine. For all analyses, the extent to which findings differed according to geographical region and the child's sex, race, and previous preschool experience also was examined.

Sample Characteristics

In the fall of 1968 four regionally distinct communities were selected which (1) had sufficient numbers of children in grade school and in the Head

Start program, (2) appeared feasible for longitudinal study given expressed community and school cooperation and expected mobility rates, and (3) offered variation in preschool and primary grade experiences. The study sites chosen were Lee County, Alabama; Portland, Oregon; St. Louis, Missouri; and Trenton, New Jersey. Within these communities, elementary school districts with a substantial proportion of the population eligible for Head Start were selected. In each school district an attempt was made to test all nonphysically-handicapped, English-speaking children who were expected to enroll in first grade in the fall of 1971 (i.e., children of approximately 3 1/2 to 4 1/2 years of age).

In 1969 mothers were interviewed and children tested prior to their enrollment in Head Start or any other preschool program. For this initial four-site sample at least partial data were obtained on a total of 1875 children, with Lee County and Portland constituting 60% of the sample. Sixty-two percent of the sample was Black, with boys comprising 53% of the overall sample. Although children who moved into target districts were added to the study each year, of the initial 1875 children seen, by Year 6 (1974) this figure had dropped to 1017 because of mobility and other factors including the elimination of the St. Louis site in the third year of the study due to situations beyond the control of ETS and Head Start administrators. Thus, except for the loss of St. Louis, attrition over six years was limited to about one-third of the original sample, with losses distributed equally across sexes and sites, but relatively greater for Whites in each site. The six-year longitudinal sample went from 62% to 72% Black across sites.

Year 6 Interview Sample

In Year 6 only those children individually tested in a previous study

year were individually tested and their mothers interviewed; group tests continued to be administered in classrooms with 50% or more study children. The mothers of 1212 study children were interviewed in Year 6. The majority (65%) of this sample of children (hereafter called the total sample for this report) were Black and there were slightly more males (53%) than females. Fifty-two percent had attended Head Start and most of these were Black (88%); about 55% of the children who attended Head Start were boys. Twenty-three percent (62% of them White) went to other preschools with boys still outnumbering girls (54%). The remaining quarter, who had not been enrolled in any preschool program, consisted of slightly more White (57%) and female (53%) children.

Table 1 describes this sample by sex, race, and preschool attendance categories for each site. Percentages are based on the total number of children within each site; other percentages (e.g., percent of the Black sample attending Head Start) can be derived through addition and division of the appropriate cell frequencies. As can be seen, the sites were similar, but the following variations from the overall description should be noted. Lee County, the largest site with a total of 572 children, had a significantly larger percentage of White children (48% vs. 35% in the total three-site sample), and slightly more males (54% vs. 53%). Trenton's sample of 268, which was the smallest, was the most racially unbalanced (89% were Black). It also had the smallest percentage of children who attended other preschools (15%) and consequently the largest percentage with no preschool experience (33%). Since Head Start was a predominantly Black program for the children in this sample, variation in racial composition across sites is primarily reflected in the different distribution by race for those children who did or did not attend other preschool programs.

Table 1

Description of Year 6 Parent Interview Sample
by Site, Race, Sex, and Preschool Attendance

		Head Start			Other Preschool			No Known			Total		
		Black	White	Total	Black	White	Total	Black	White	Total	Black	White	Total
	Male	153(27)	17(03)	170(30)	11(02)	75(13)	86(15)	4(*)	48(08)	52(09)	168(29)	140(24)	308(54)
Lee County	Female	116(20)	12(02)	128(22)	7(01)	67(12)	74(13)	4(*)	58(10)	62(11)	127(22)	137(24)	264(46)
	Total	269(47)	29(05)	298(52)	18(03)	142(25)	160(28)	8(01)	106(19)	114(20)	295(52)	277(48)	572
	Male	84(23)	19(05)	103(28)	35(09)	11(03)	46(12)	25(07)	18(05)	43(12)	144(39)	48(13)	192(52)
Portland	Female	73(20)	21(06)	94(25)	19(05)	16(04)	35(09)	24(06)	27(07)	51(14)	116(31)	64(17)	180(48)
	Total	157(42)	49(11)	197(53)	54(15)	27(07)	81(22)	49(13)	45(12)	94(25)	260(70)	112(30)	372
	Male	71(26)	5(02)	76(28)	18(07)	1(*)	19(07)	35(13)	9(03)	44(16)	124(46)	15(06)	139(50)
Trenton	Female	62(23)	2(01)	64(24)	17(06)	3(01)	20(07)	35(13)	10(04)	45(17)	114(43)	15(06)	129(48)
	Total	133(50)	7(03)	140(52)	35(13)	4(01)	39(15)	70(26)	19(07)	89(33)	238(89)	30(11)	268
	Male	308(25)	41(03)	349(29)	64(05)	87(07)	151(12)	64(05)	75(06)	139(11)	436(36)	203(17)	639(53)
3-Site	Female	251(21)	35(03)	286(24)	43(04)	86(07)	129(11)	63(05)	95(08)	158(13)	357(29)	216(18)	573(47)
	Total	559(46)	76(06)	635(52)	107(09)	173(14)	280(23)	127(10)	170(14)	297(65)	793(65)	419(35)	1212

Note. Numbers in parenthesis are percentages based on the total sample for each site.
* = less than one percent.

Longitudinal Interview Sample

Two smaller groups were derived from this total interview sample to comprise the longitudinal interview sample described in this report. The larger of the two groups (n = 852) included those children who were administered Raven's Coloured Progressive Matrices in Year 6 and whose mothers were interviewed in Year 1 and reinterviewed in Year 6. Children in target third-grade classrooms (i.e., with 50% or more children who had been previously tested) who were administered the Cooperative Primary Tests and whose mothers were interviewed in both Years 1 and 6 made up the second, smaller subsample (n = 523); almost all these children also were given the Raven. A considerable number of longitudinal children, though located for individual testing, were excluded from this sample. Some were no longer in target classrooms and thus were not administered the group achievement tests. In addition to simply moving out of the district, the most frequent reasons for no longer being in a target classroom were failing or skipping a grade, enrollment in a private/parochial school, and, in Portland, exercising the option available there to be bused to a different elementary school. Others were excluded because a parent interview was missing in Year 1 and/or Year 6. The most frequent reasons for not obtaining an interview were difficulties in scheduling because of the mother's prolonged absence from the home, illness, and multiple jobs; given flexible scheduling and rescheduling, refusals were extremely rare.

The longitudinal sample can be briefly described as follows. (As can be seen in Tables 2 and 3, despite the discrepant total numbers for the Raven and Cooperative Primary Test groups that comprise this sample, percentages across breakdowns were essentially the same.) The majority were Black (71%); boys comprised 53% of the sample. Fifty-seven percent had enrolled in Head Start,

Table 2

Description of Longitudinal Sample for Raven
by Site, Race, Sex, and Preschool Attendance

		Head Start			Other Preschool			No Known			Total		
		Black	White	Total	Black	White	Total	Black	White	Total	Black	White	Total
Lee County	Male	120(32)	8(02)	128(34)	10(03)	54(14)	64(17)	1(*)	22(06)	23(06)	131(35)	84(22)	215(57)
	Female	81(22)	6(02)	87(23)	7(02)	44(12)	51(14)	1(*)	21(06)	22(06)	89(24)	71(19)	160(43)
	Total	201(54)	14(04)	215(57)	17(05)	98(26)	115(31)	2(*)	43(11)	45(12)	220(59)	155(41)	375
Portland	Male	67(24)	11(04)	78(28)	28(10)	5(02)	33(12)	18(06)	16(06)	34(12)	113(41)	32(12)	145(52)
	Female	60(22)	11(04)	71(26)	16(06)	13(05)	29(10)	16(06)	17(06)	33(12)	92(33)	41(15)	133(48)
	Total	127(46)	22(08)	149(54)	44(16)	18(06)	62(22)	34(12)	33(12)	67(24)	205(74)	73(26)	278
Trenton	Male	52(26)	5(03)	57(29)	10(05)	0(-)	10(05)	26(13)	5(03)	31(16)	88(44)	10(05)	98(49)
	Female	55(28)	1(*)	56(28)	11(06)	2(01)	13(07)	26(13)	6(03)	32(16)	92(46)	9(05)	101(51)
	Total	107(54)	6(03)	113(57)	21(11)	2(01)	23(12)	52(26)	11(06)	63(32)	180(90)	19(10)	199
3-Site	Male	239(28)	24(03)	263(31)	48(06)	59(07)	107(13)	45(05)	43(05)	88(11)	332(39)	126(15)	458(54)
	Female	196(23)	18(02)	214(25)	34(04)	59(07)	93(11)	43(05)	44(05)	87(10)	273(32)	121(14)	394(46)
	Total	435(51)	42(05)	477(56)	82(10)	118(14)	200(23)	88(10)	87(10)	175(21)	605(71)	247(29)	852

Note. Numbers in parenthesis are percentages based on the total sample for each site.

* = less than one percent.

Table 3

Description of Longitudinal Sample with Cooperative Primary Tests
by Site, Race, Sex, and Preschool Attendance

		Head Start			Other Preschool			No Known			Total		
		Black	White	Total	Black	White	Total	Black	White	Total	Black	White	Total
	Male	83(30)	7(03)	90(33)	8(03)	40(14)	48(17)	1(*)	14(05)	15(05)	92(33)	61(22)	153(55)
Lee County	Female	62(22)	4(01)	66(24)	7(03)	33(12)	40(14)	0(-)	17(06)	17(06)	69(25)	54(20)	123(45)
	Total	145(53)	11(04)	156(56)	15(05)	73(26)	88(32)	1(*)	31(11)	32(12)	161(58)	115(42)	276
	Male	34(27)	6(05)	40(32)	13(10)	2(02)	15(12)	7(06)	2(02)	9(07)	54(43)	10(08)	64(51)
Portland	Female	33(26)	3(02)	36(29)	10(08)	4(03)	14(11)	6(05)	6(05)	12(10)	49(39)	13(10)	62(49)
	Total	67(53)	9(07)	76(60)	23(18)	6(05)	29(23)	13(11)	8(06)	21(17)	103(82)	23(18)	126
	Male	34(28)	2(02)	36(30)	4(03)	0(-)	4(03)	17(14)	3(02)	20(17)	55(45)	5(04)	60(50)
Trenton	Female	29(24)	1(*)	30(25)	4(03)	2(02)	6(05)	20(17)	5(04)	25(21)	53(44)	8(07)	61(50)
	Total	63(52)	3(02)	66(55)	8(07)	2(02)	10(08)	37(30)	8(07)	45(37)	108(89)	13(11)	121
	Male	151(29)	15(03)	166(32)	25(05)	42(08)	67(13)	25(05)	19(04)	44(08)	201(38)	76(15)	277(53)
3-Site	Female	124(24)	8(02)	132(25)	21(04)	39(07)	60(11)	26(05)	28(05)	54(10)	171(33)	75(14)	246(27)
	Total	275(53)	23(04)	298(57)	46(09)	81(15)	127(24)	51(10)	47(09)	98(19)	372(71)	151(29)	523

Note. Numbers in parenthesis are percentages based on the total sample for each site.

* = Less than one percent.

24% had attended other preschool programs, and the remaining 19% had no preschool attendance on record. The Head Start group was essentially Black (92%) and contained more males (56%). More White than Black children had been enrolled in other preschool programs (about 64%), with males again present to a somewhat greater degree. Children not known to have been enrolled in any preschool program were divided about equally by both sex and race. Thus in comparison with the total Year 6 interview sample, this longitudinal sample comprised more Blacks, more children who had attended Head Start, and fewer who had not enrolled in any preschool program. Except for a few differences in Portland, within the individual sites it was again true that the characteristics for the Raven and Cooperative Primary subgroups were generally so close as to make any further comparison unnecessary.

Attrition

A detailed examination of attrition experienced in the samples included in the analyses described in the present study revealed a generally high percentage of families who were followed over the six-year period. As was evidenced in the separate race within site analyses, attrition primarily occurred for those White families temporarily residing in Lee County while connected with Auburn University or one of the nearby military bases. There were few if any differences obtained when Year 1 interview responses were compared for longitudinal families who were not reinterviewed in Year 6 or whose child was not administered a reading or math achievement test in a target classroom. The relatively small attrition in the three remaining study sites is in large part due to the extraordinary tracking efforts of project field staff. The value of committed, knowledgeable local coordinators who have remained with the study and maintained warm trusting relationships with school

personnel and community residents is inestimable. Given the frequent gaps in school records and the delays in transferring records when children move, effects compounded when the rate of school transfers is high, as it is in many urban areas, such smooth working relationships become especially critical.

Data Collection Procedures

Year 1 Procedures

Community support and participation were essential if meaningful, useful data were to be obtained. Community leaders and administrators were consulted, and written intents (not merely consents) to participate in the study were sent to ETS by both community agencies and local school boards. Field operations were organized around local staff who served as coordinators, interviewers, testers, and observers. For the first phase of data collection, household canvassing and parent interviews, ETS subcontracted with the New York City firm of Audits and Surveys (A&S) to locate eligible children and then complete a 90-minute ETS-prepared interview with each eligible child's mother or mother surrogate. The interviewers, all female and matched by race with respondents, were recruited from the local communities, with A&S staff responsible for both training and supervision. In subsequent years of the study, parent interviews were handled in a similar manner, except that ETS assumed the training and supervision responsibilities that had been subcontracted to A&S.

During the first study year individual child tests and mother-child interaction tasks were administered by local women, most of whom were black housewives with limited work experience. While the usual educational credentials were not required, experience in working with young children was considered highly desirable, as was the ability to read well and speak with ease. After four to five weeks of training, final selection of testers was

made by the project director and a senior member of the research team. Testing was monitored by the local coordinator and by ETS regional and Princeton office staffs.

Year 6 Procedures

Training procedures were essentially identical in later years except that with increased experience the training period could be reduced to three weeks. Differences between Year 1 and Year 6 data collection procedures primarily reflected the change in status of study children from age 3 1/2 to age 8 1/2. In the early years of the study, test centers were located in churches or community recreation facilities, while in later years testing was done in rooms available in the individual schools or in mobile vans parked outside of the school. The study was very fortunate to be able to continue to work with the same local coordinators whose commitment, loyalty and skill cannot be overemphasized. The continuity of the warm and smooth functioning relationships that they had established with school personnel in the various sites contributed significantly to the success of the study.

Training of Interviewers and Testers. As in Year 1, all training sessions in Year 6 were conducted by Princeton staff and comprised the following sequence: instruction on general testing procedures, specific task demonstrations, practice with trainers and other trainees, practice with children and adults of their acquaintance, and practice with unfamiliar children and adults similar to those in the study. All final evaluations were made during the last week by the principal investigator, following which additional practice and instruction on general management procedures was provided. For Trenton, training sessions took place at the ETS Princeton offices; for Lee County and Portland, in rented vacant classroom space and at the local coordinator's office. As in Years 2 through 4, the training period for testers was

reduced to three weeks; training of interviewers usually comprised eight days. Training of parent interviewers and of child testers proceeded simultaneously at each site on a staggered start date.

Parent Interview. The Year 6 Parent Interview was approximately 1 1/2 hours in length and took place with the mother or maternal surrogate; a small honorarium was provided. Items were organized in five parts--those referring specifically to the child, to his/her school experiences, to neighborhood schools and education in general, to the community, and to personal and family information. The order of items is deliberate since it has been found that most mothers are willing to talk about their children, and, as rapport is established during the process of the interview, become less unwilling to discuss more personal information, such as age, employment, etc. Ninety-three percent to 95% of the respondents were rated as cooperative or very cooperative on the five parts of the interview. At least three appointments were made (on different days and at different times) before considering the respondent a refusal. As in Year 1, all Year 6 interviews were conducted in the child's home; it was felt that a description of the child's physical surroundings at this time would provide valuable supplemental information. Also, as in Year 1, interviews were administered by local women and monitored by the site coordinators. Princeton staff checked all interviews received for missing or ambiguous information requiring followup and provided feedback to the local coordinators.

Data collection, however, is rarely the smooth operation outlined in a journal article. As anyone familiar with home interviewing will understand, conditions varied from a relaxed two-person chat on the living room sofa, to sitting at the kitchen table experiencing several interruptions from neighbors

and children, to standing in a crowded one-room apartment. Thus, though the interview was administered on the average in 80 minutes, interview time ranged from 55 minutes to two hours. For 8% of the interviews, the noise level was high enough to be rated distracting. Also, recruiting interviewers proved to be difficult. Due to the critical gas shortage that developed that winter many were reluctant to assume a job which could involve considerable traveling. Once trained, several interviewers had unexpected serious illnesses requiring hospitalization and extended convalescence, and new staff had to be trained. Difficulties were encountered in scheduling interviews, too. Locating and contacting mothers for interviews often was a complicated matter involving tracking several changes of address. Given also the increased number of working mothers in the study, limiting their availability for interviews to evenings and weekends, interviewing proceeded very slowly and had to be extended past the school year. Consequently, some interviewers had to reduce their time working away from home, thereby further prolonging completion of this phase of data collection. The data thus reflect to an unknown extent any variation in response due to the time of year obtained and the interval between home and child assessment.

Individual testing. An attempt was made to locate and test all study children who had been individually tested in at least one previous year. The cooperation of local public and parochial school administrative and teaching staffs in assisting in the tracking of study children and facilitating data-gathering activities was a primary factor in the relatively low attrition in the study sample. Individual tests were grouped into two 1 3/4-hour batteries, with each battery usually administered in a single session with a child. Testing, which proceeded from February through May, was monitored by the

local coordinator. As noted earlier, all testing was done in the child's school or in a van parked in the school yard. Data were shipped weekly to the Princeton office where they were checked by tester trainers who provided feedback and monitoring of testing procedures.

Group testing. Group achievement tests were administered in the spring by the classroom teacher in target classrooms (those with 50% or more children who had been previously tested). The local coordinator explained the procedures for group testing and was available to assist the teacher as necessary.

Data Processing

The data from all the above measures were coded at the item level by ETS Princeton office staff and all coding was double-checked. When necessary, data were first scored, interscorer reliabilities obtained, and all scoring double-checked and discrepancies resolved by senior staff. The coded data were keypunched and independently verified, after which the resultant individual data tapes were edited for appropriate ID listing and for out-of-range values and scores logically inconsistent with other responses. To facilitate analysis, merge tapes for each study year were prepared which comprised all derived family and child scores from the separate task tapes.

Results and Discussion

The major findings from the responses to the approximately 300 interview items can be summarized as follows: 1) On the average, parents in study families had approximately 11 years of formal schooling and worked in blue-collar jobs; more than half the mothers were employed. In 36% of the families fathers were absent, and for 18% public assistance was the main source of support. 2) Within this relatively narrow socioeconomic range, considerable variation in family processes was observed. Thus, families within the same parental occupational and educational levels and with similar material resources varied

in their (a) interactive patterns with study children, (b) attitudes toward local schools and education, (c) use and knowledge of community resources, (d) participation in extra-family activities, (e) feelings of efficacy and optimism, (f) support of school-related activities, and (g) perceptions of the study child. In examining correlations between status/situational characteristics and the mother's reported interactions with her child, at best less than 13% of the variance in any of these behaviors could be explained by any one of the status or situational variables. 3) Various indices of socioeconomic status showed only moderate intercorrelation, suggesting that no single index should be used as a general proxy for SES and indicating the complex dimensionality of social stratification. 4) Congruent with other research findings, few variables were found to correlate with father absence and residential mobility per se; each family apparently develops a unique way of coping with these stresses, and no single set of processes can be used to characterize all father-absent or mobile families.

Examination of the stability of family characteristics revealed the following findings: 1) Although status characteristics showed moderate to high stability over the six-year period, process variables showed considerable individual change. Thus, even though family status remains relatively constant over a number of years, the way in which the family operates within the environment may change considerably. 2) Corresponding to increases in single-parent homes and in male unemployment in two-parent families, significantly more mothers in the study sample were employed in Year 6. 3) Despite the previous statistics, for those families who remained in the study,[3] general

[3]Comparison of Year 1 interview responses by race within site for those families who were and were not included in these analyses revealed significant attrition in the higher SES white sample only. There were no significant differences between groups in initial parental attitudes or behaviors reported.

increase in material well-being, greater feelings of optimism, more favorable attitudes toward school, more child-oriented attitudes and behaviors, and more active involvement in school-related activities were evidenced. Families were not uniform or consistent in the direction or degree of change, however.

The major findings from the several analyses of the relationships of family status, situational, and process variables to children's cognitive performance can be summarized as follows: 1) Concurrent and longitudinal patterns of correlations between family variables and third-grade cognitive-perceptual scores were similar, although the function of certain individual items (e.g., amount of maternal reading to the child) apparently shifted across years. In the example cited, the results suggested that the change was in the expression of the variable rather than in the variable itself since the mother's reading to her child at age four was significantly correlated with the child's possession of a library card at age nine. 2) Status and situational variables generally had moderately high positive correlations with the child's performance, with parents' amount of formal schooling having the strongest relationship. Again, father absence and residential mobility showed little or no relationship, respectively, to the child scores. 3) Those family variables which were found to be related to the child's cognitive-perceptual performance at age four tended to continue to be associated with the child's academic skills and more general problem-solving ability at age nine. The various indices of physical and psychological resources in the home, extent of maternal encouragement and involvement with the child in school-related tasks and achievement expectations for him/her, use of alternatives to physical punishment in response to the child's misbehavior, and knowledge and use of community resources were positively associated with the child's performance on a variety of cognitive and perceptual tasks. In accord with Slaughter's

(1975) findings, certain process variables with low stability appeared to be more situationally determined (e.g., attitudes toward school and feelings of efficacy in resolving school and community difficulties) and were not correlated with the child's cognitive performance. 4) Results from the First Day of School Question and structured mother-child interaction situations administered in Year 1 provided evidence for a facilitating effect on the child's cognitive development of maternal warmth, use of more specific language, greater reliance on verbal feedback from the child, encouragement of verbalization, use of positive versus negative controlling techniques, the provision of rationales based on feelings and logical consequences rather than on power and normative expectancies, and extent of supportive statements about early school experiences. 5) Changes over time in a few variables (e.g., mother's expectations for the study child's educational attainment, use of informative-interactive responses to the child's difficult questions, mother's participation and involvement in community activities, frequency of newspaper and magazine reading, and material resources in the home) contributed significantly to accounting for the child's achievement. The potency of the expectancy variable was particularly evidenced. Simultaneously considering both Year 1 and Year 6 expectation scores in a multiple regression equation yielded a multiple $\underline{R}$ from .45 to .55. 6) There were few significant part correlations between early measures of the child's home environment and the child's third-grade reading, math, and Raven performance after controlling for the child's level of preacademic skills at age four. This does not imply that continuation of such activities is unimportant (or that later family behaviors were not influential), but only that their influence was not different from that measured earlier. These findings also indicate the influence of the child's early orientation and readiness for school on his or her subsequent school performance. The fact

that significant part correlations were obtained for parental education and the mother's membership in groups probably reflected the additional resources for facilitating the child's educational progress that these experiences provided.

Status/situational and process variables shared considerable commonality in their prediction of the child's subsequent reading, math, and Raven performance; the process variables, however, help provide important explanatory information and programmatic clues that are not obvious from status characteristics alone. As static group categories are replaced by delineation of those behavioral and attitudinal variables reflecting processes which link social and cultural environments to the emerging capabilities of young children, meaningful SES relationships may be determined. The association between status/situational and process variables might be best understood as reflecting differences in opportunities provided for particular process variables to emerge. Thus, a higher level of parental education is associated with greater academic knowledge, increased awareness of public affairs and popular culture, more informed perceptions of school, and continued seeking of new knowledge as in reading books and magazines (cf., Hyman, Wright, and Reed, 1975), all of which may have impact on the child's knowledge and motivation for learning. In addition, by providing differential opportunities for the parent's participation in society, there may be indirect effects upon the child via parental attitudes and child-rearing behaviors acquired through such experiences. Another example of the interrelatedness of status, situational and process variables is the commonly found association between low economic status, high household density, and parental use of physical punishment with their children. These negative effects of crowding have been shown to be exacerbated by additional stresses in the home (Booth & Edwards, 1976). Family process

variables are thus considered as the underlying mechanisms by which child outcome differences associated with family status characteristics are created and maintained.

Results of the regression analyses performed clearly point out not only the interrelated but the cumulative effects of these family variables on the child's academic achievement and cognitive-perceptual performance. For example, the child reared in a home with stresses associated with poverty, with little educational enrichment or encouragement, and limited stimulation outside the home either directly or indirectly via the mother's involvement, would be expected to show greater impairment in functioning than the child reared under equally impoverished conditions, but whose parent is actively engaged in the community. In the first case, the mother's alienation may reflect a general depression which accentuates the debilitating life circumstances for the child; in the second, the mother's participation may reflect a belief in her ability to determine consequences (internal locus of control), thereby providing a motivational model for the child, in addition to increasing the child's exposure to stimulating experiences in a more varied environment.

Findings were generally replicated across site, race, sex, and preschool enrollment categories. As would be expected, except for a few items pertaining to the child's interests and activities (with girls perceived as more mature, responsible, and more interested and competent in academic skills, particularly reading), no significant differences in family characteristics were found for those study parents of boys and girls. Several significant differences, however, were obtained according to region, race, and preschool attendance category. As was found in our initial description of study families, those families who were Black, enrolled the study child in Head Start, or lived in Trenton's

crowded urban environs, were most economically impoverished. Despite the general increase in material well-being, race/SES gaps remained, and for the limited number of inner-city Black families in the sample, economic conditions generally had deteriorated. Consistent with recent census figures, father absence was significantly higher in Black families (46% vs. 14%) and had increased significantly in the six-year period. Unemployment rates also were significantly higher for Black fathers and heads-of-household, although rates of change were not different for Black and White study families. Consistent with earlier study findings (Shipman, 1972a), a significantly smaller correlation was obtained in Black families between parents' educational and occupational levels and between occupational level and children's performance. Thus, in accord with Stricker's (1976) recent findings, occupational status appears to have a different meaning for Black and White families. Race differences in the magnitude of correlations between family variables and the child's cognitive-perceptual performance suggested Black children's performance was affected to a greater extent by other child and extra-family influences (e.g., differences in child motivation, teacher expectancies, and school resources), although slightly lower reliabilities in the criterion scores for the Black sample may have accounted for some of the race differences. Slaughter (1975) suggests that such differences in the predictability of the child's cognitive performance in school may indicate the discontinuity of the low-income Black child's home and school experiences; and Portes and Wilson (1976) have described the relatively greater role that self-esteem and achievement aspirations play in Black students' educational attainment as a function of their "outsider" status.

As many recent writers have pointed out (e.g., Edwards, 1975; Pettigrew, 1976; Slaughter, 1975), the existing literature has emphasized the adverse

influences of Black low-income parents' childrearing practices upon the socialization of achievement motivation and cognitive processes in their young children (cf. Freeberg & Payne, 1967; Hess, 1970). In accord with our earlier discussion of the interrelatedness of status, situation, and process variables, we need to examine further the extent to which family socialization practices derive from existing social conditions (i.e., from extra-family variables rather thar intra-family traits). Thus, for example, greater attention should be paid to how economic policies and conditions affect family structure and consequent interactions. To many, such examination of Black low-income families in the United States appears imperative (Comer & Poussaint, 1975; Keniston, 1976; Pettigrew, 1976). Similarly, the greater emphasis by Black mothers on their child's obedience may be viewed as an adaptive response to their perception of what a Black child must do to succeed in a white middle-class-dominant society (cf. Comer & Poussaint, 1975).

Although there was no apparent general effect of Head Start (or other preschool) experience on the child's third-grade test performance, comparative findings for Black low-SES families who did and did not send their children to Head Start suggested benefits to Head Start mothers that have potential long-term impact (i.e., in contrast to Black Head Start-eligible mothers whose child had not attended any preschool program, more Head Start mothers had taken courses to further their education and they had higher aspirations for their child's educational achievement). In addition, their feelings of efficacy and attitudes towards education in general and the child's school in particular were at least as high as those for the "no preschool" sample which was of higher socioeconomic status. Head Start participation may have acted to reduce the influence of status variables. Black Head Start families whose children were enrolled in Follow

Through programs in Year 6 (third grade) significantly differed from Black non-Follow Through Head Start families in reported participation and involvement in both school and other community activities and in the obtaining of medical and dental services for their children. These data suggest the value of such continued broad-range services in the schools for families similar to those in the study. The fact that predictive correlations from family status and process to third-grade outcome variables tend to be weaker for those who experienced preschool suggests that the preschool experience may be influential in disrupting the dismal cycle of determinism that has been the lot of many children of poverty-stricken families by effecting changes in the family and/or the children.

It also should be pointed out that the fact that families in this predominantly low-SES sample showed a significant increase in feelings of optimism and efficacy, participation in school activities, knowledge and use of community resources, and aspirations and expectations for their children's educational achievement may reflect in part diffusion effects of community-action programs such as Head Start. As the Kirschner Associates report (1970) indicated, agencies (e.g., hospitals, schools) in those communities in which Head Start was located showed significant positive changes in attitudes and behaviors affecting low-income families. Thus, cohort effects may be evident that have a basis in the fact that all families resided in communities where Head Start was available. Moreover, the increased emphasis in the seventies on parent involvement in the education of their children which may be reflected in these findings, may be viewed as an out-growth of family-centered child development programs such as Head Start.

In describing these group differences, however, the reader should be cautioned that a number of variables used to describe groups are confounded.

For example, preschool program is confounded with site, race, and socioeconomic status. Differences between sites are confounded with region of the country, urbanness, socioeconomic status, and perhaps many other unknown variables. When the groups being compared differ on several variables we cannot be sure which of them is most explanatory of any differences in means that are observed or whether an important explanatory variable was not measured. Moreover, these sites are not a random sample of a population of communities nor are the children in the sites a random sample of the children in these areas or of any definable population of disadvantaged children. Thus, these data do not allow us to extrapolate to proportions of Head Start children in general. Consequently, any interpretation of group differences presented in the report should be regarded as tentative. But the power of overwhelming evidence should not be overlooked such as a major effect occurring in all three sites (e.g., the strong association of expected educational attainment with the child's achievement) or large differences found among sites (e.g., significantly higher unemployment rates in the urban sites). Such findings need to be replicated.

Implications for Social and Educational Policy

During the past 15 years the influence of the family, especially the mother, on the cognitive development of the young child has become increasingly recognized and researched (Hess, Shipman, Brophy, & Bear, 1968, 1969; Lytton, 1971; Schaefer, 1972; White, 1975; White, Day, Freeman, Hantman, & Messenger, 1973). This recognition is currently exemplified by the impetus given to the development of programs and materials to facilitate parent involvement during these early years (Gordon, 1976; Honig, 1975). The present findings support the importance of early parent-child interactions as well as the child's early acquisition of school-relevant skills and motivation and those programs such as Head Start which emphasize parents' involvement in the

child's educational experience. The importance of developmental guidelines for day-care programs also is evident.

The results also indicate that changes in family processes that have significance for the child's cognitive development and educational progress can and do occur. In discussing early influences on the child's later acquisition of school skills and the stability of family characteristics, emphasis has been placed, therefore, on the flexibility of the organism and on the complex developing interactions that occur between the child, the family setting in which his/her development is embedded, and the larger society. Neither the child nor his or her environment is static. Prediction is not determinism. Our responsibility is to determine how to promote those changes that will facilitate the development of all members of society. A salient variable in the present study for understanding the child's school success was the mother's level of educational aspirations and expectations for her child. We need to delineate those factors affecting such levels (e.g., provision of contingent positive feedback for achievement efforts, availability of family support systems, experiences which enhance each family member's self-esteem, potency, and resources). Increased educational and job opportunities could be one source of change. Also, the present findings suggest that the mother's level of aspiration is directly tied to the child's <u>early</u> signs of intellectual alertness. If so, the implication is that early cognitive stimulation from within or outside the home is important for the mother <u>subsequently</u> to provide a continuously stimulating climate. This reciprocity and interdependence in behaviors was evident in recent findings reported by Falender and Heber (1975) whereby changes induced in the child by extrafamilial stimulation had the additional result of inducing changes in the mother's interactions with the

child. Consistent with previous research (Hess et al., 1968, 1969), the present findings suggest that as the mother interacts more, she feels less powerless, more optimistic, and is less likely to resort to status and authoritarian appeals for controlling her child. Thus, programs reducing alienation may in turn increase the child's educability. We would also expect that as a result of the parents' participation in early intervention programs the family would become less alienated from the educational system and would come to define school not only in a more positive way, but also in a more differentiated fashion. This, in turn, should provide the child with more adequate and useful images of the school, of the teacher, and of the role of active student.

Support also is provided for the widespread facilitative effects of economic support to impoverished families. For families with extremely limited resources, not only do such changes in material resources obviously affect the immediate well-being of family members but in some direct or indirect manner apparently influence the child's school success and consequently the probability for his or her future growth and achievement. The findings also suggested particular areas of need for improved delivery of social services to poor families. Despite the low representation in the study sample of those in the most impoverished circumstances, a considerable-sized minority of mothers reported that: 1) their child had not been to a doctor since entering grade school; 2) they had no friends; and 3) their child had a problem which was of serious concern.

As the present data indicate, most study families feel positively toward the schools and value highly their child's educational attainment. Given their children's early interest and enjoyment in school (Bridgeman & Shipman, 1975), there is powerful potential support for creative instructional approaches that meet the diversity of children's needs and enhance their development. But for

many economically disadvantaged families there was considerable discrepancy between aspirations and expectations for their child's educational attainment. The data provide suggestions for areas needing improvement if there is to be closer liaison between home and school and pooling of resources to enhance the child's development. The majority of parents in the present sample felt that most teachers in their child's school do not understand community needs. Also, although a number of parents visited their child's school and assisted with extracurricular activities, very few had been involved in discussions of the curriculum their child received. A substantial number of families would appear to require concerted outreach efforts from the schools; 19% of the mothers did not know the name of their child's teacher. The lower correlations within Black families between family variables and child achievement also suggest further examination of differential educational treatment according to race. There was some indication in the findings that the more impoverished study families experienced more impoverished educational conditions for their children.

A major policy implication of the present study is that although SES, ethnicity, sex, region of residence, may be important as group indicators for political purposes, they may be irrelevant as functional indicators for purposes of educational design and planning. Usual classifications by family structure, ethnicity and income are less useful than assessing the attitudes and child-rearing values of the families involved. Low-income parents are not a homogeneous group.

Implications for Future Research

Many of the results reported here are only suggestive of potential avenues for future research. For example, the current data suggest that future evaluations of Head Start should more carefully investigate potential impacts

on mothers, particularly in the areas of the mothers' furthering their own educations and actively participating in their children's schooling. These impacts on mothers might not have any immediate measurable effects on their children, but might influence attitudes and achievement years after graduation from Head Start. Effects on subsequent children might be stronger and appear earlier. Young children from large families in which the mothers were active participants in Head Start programs for a number of years could be compared to similar families in which mothers had not been involved with Head Start or any similar programs. Also, in the present study only broad preschool attendance categories were used; future analyses should investigate possible differential effects due to particular program and participant characteristics. Of particular importance would be the extent to which parents were involved in learning activities they could carry out with their children (Bronfenbrenner, 1974).

The predictive power of educational expectancy, and in changes in expectancy over time, suggests the importance of more fully exploring this variable. Although the mother's expectancies for her child's educational attainment were clearly related to the amount of schooling she received, the correlation between these two relatively reliable variables is low enough to indicate the importance of other factors. It eventually might be possible to identify methods of modifying mothers' expectancies with positive consequences for their children, although such attempts at manipulation may simply destroy the correlation between expectancies and achievement.

The present report focused on those findings generally characteristic of the study sample and major participant categories (i.e., geographical region, race, and child's sex and preschool experience). Greater understanding of the relationships investigated in this study should be provided by further

analysis of those longitudinal families who did and did not change on status, situational, and process variables, focusing on comparison of those who showed positive and negative change (e.g., comparisons among the parents and children in families who showed upward or downward mobility during the five-year period). Future analysis also should examine the differential predictive findings obtained by sex (within race) of child and nature of the cognitive task (i.e., achievement tests vs. Raven). For example, the Raven may be viewed as relatively more "culture free" compared to the academic achievement measures and thus motivational and cognitive style differences may be more free to operate. Also, possible differential effects on child behaviors for certain variable combinations, as suggested by Emmerich's (1977) recent study findings, need to be explored further.

The current report clearly demonstrates the importance of a variety of family influences on children's cognitive development. Yet it is also clear that the variables assessed account for only a fraction of the variability in third-grade performance. We are now focusing on other potentially important determinants of school success, in particular the influence of early classroom experiences and the interaction between home and school experiences. There is considerable need for further investigation of the complementarity of roles various socializing agents (e.g., home, school, peers) play in affecting the child's school performance. Any attempt to assess causal priorities among family, school and child variables, however, represents an oversimplification of a system in which reciprocal causation is possible and even probable. The present study is viewed as one step in a programmatic effort to understand how these various socializing agents interact to enhance or interfere with the child's development. In accord with Sameroff's (1975) view, such interactions

are seen as a continual and progressive interplay between the organism and its environment. Some of these dynamic interdependencies were seen in the mother's change in response as a function of her child's developmental level and in the effects of changes in situational variables on process variables and thereby child outcomes. Future research efforts will be increasingly focused on further examination of such dynamic interactions.

Conclusion

The present study has focused largely on cognitive correlates of family status and process variables. But cognitive functioning is only one aspect of the child's adaptation in the classroom. The child's adaptation includes his or her feelings and behaviors toward self, peers, and the school. In addition, the interactions of such attitudes and behaviors with the child's cognitive competencies and with school task demands are critical components of adaptation to the school setting. In order to enhance such adaptation, we need to better understand the nature of such attitudes and behaviors and those home and school variables influencing their development. In contrast to our understanding of children's cognitive development, however, our understanding of children's affective and social development and those factors influencing such development is meager. To a large extent, this is due to less well-articulated theories of such development and a paucity of adequate instrumentation for assessing it. Future reports will attempt to provide data to help fill in these gaps through a longitudinal analysis of the effects of family style and classroom climate on the social adaptation of low-SES children during the primary grades.

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